alberta's species at risk program

MULTISAR

A Multi-Species Conservation Strategy For Species at Risk In the Grassland Natural Region of Alberta

2012-2013 Report

Alberta Species at Risk Report No. 148

Alberta Conservation Association

Conserving Alberta's Wild Side

PRAIRIE CONSERVATION FORUM

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Over the last ten years, MULTISAR has been very fortunate to work with a ranching community that has embraced the project and the continued protection of rangelands and wildlife habitat. The working relationships established with land owners provide the foundation for which MULTISAR projects are successful.

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EXECUTIVE SUMMARY

2012-2013 marked the 10th anniversary of the MULTISAR project. Though there have been many changes in the delivery of MULTISAR over the last ten years, MULTISAR is considered a leader in the conservation of species at risk and management of native prairie. The 2012-2013 fiscal year was marked by a number of celebrations for the program but in general it was business as usual for the MULTISAR Team.

The Habitat Conservation Program includes the development of detailed Habitat Conservation Strategies (HCS) in the core project area of southern Alberta, as well as the more compact Species at Risk Conservation Plans (SARC Plans) delivered throughout the Grassland Natural Region. In 2012-2013, new HCSs were developed on three ranches totalling approximately 12,983 acres. Associated habitat enhancement projects were also developed to improve the habitat of key wildlife species. A number of habitat projects were developed on HCS properties. These varied from weed control, native prairie restoration, water development, wildlife-friendly fencing, shrub planting and tree protection. In addition, SARC Plans were developed on 5 private ranches totalling approximately 2828 acres and a new product called Beneficial Management Plan for key species or wildlife habitats was delivered on 12 properties totalling 13,465 acres.

Education, Outreach and Awareness remained greatly scaled back this year again due to limited resources to deliver this program. However, MULTISAR staffs were able to give live and poster presentations to landowners, interest groups, students and the general public and to participate in a number of extension activities, including the 10th Prairie Conservation and Endangered Species Conference. Communication materials, including one special 10 year anniversary issue of MULTISAR's newsletter, one update of the species at risk identification guide, and a 10 year anniversary coffee table book were developed. In total, MULTISAR made over 261 different contacts with more than 883 people including landholders, the general public, academia, industry, media, government and non-government organizations and other sectors.

Under the Research and Monitoring Program, MULTISAR continued implementing its monitoring and evaluation protocol to assess the directionality of habitat improvements and management changes and the effectiveness of its habitat conservation strategies. A subsample of range sites and wildlife points were revisited on the second MULITSAR HCS ranch to determine if management recommendations had been implemented and how they impacted species at risk habitat.

1.0 INTRODUCTION

The Grassland Natural Region (GNR) boasts an incredible array of plant and wildlife diversity. In an area that makes up only 14.6% of Alberta's total land surface, about 60% of the 274 species of birds, fish and mammals, 37% of the 452 species of invertebrates, and 52% of the 1163 vascular plants recorded by the Alberta Biodiversity Monitoring Institute in the province are found, for a total of 925 species (ABMI 2013). Yet, this is one of the most impacted regions in the province with a human footprint covering 61% of the area. Much of the region has been converted to farmland, industrial land, urban and suburban areas and to transportation corridors. What remains, sustains more than 75% of Alberta's species at risk and is facing an increasing amount of human development pressure and supports complex land uses. Attempting to maintain or return multiple prairie wild species to sustainable population levels over such a large region and under these circumstances presents a formidable challenge to fish, wildlife and rangeland managers. A multiple species conservation and habitat stewardship approach becomes more effective.

The concept of multi-species conservation and stewardship at the landscape level was introduced 10 years ago in the Alberta GNR and evolved into a project recognized by landowners, fish, wildlife and land managers and conservation groups. *MULTISAR*, as it became known, is a multidisciplinary collaborative project involving three organizations; the Alberta Conservation Association, Alberta Environment and Sustainable Resource Development and the Prairie Conservation Forum. It was initially focused in the Milk River basin landscape where an important density of species at risk and the availability of large tracts of relatively intact natural grasslands remain, but was later expanded into the adjacent St. Mary River and Pakowki Lake Basins to include some important species at risk habitats. An extension component of the project was developed in 2007, which widened its application into the entire GNR and the adjacent Foothills Parkland and Montane Natural Subregions. Currently, MULTISAR collaborates with over 25 land holders on 269,712 acres of habitat for the implementation of its core program, and an additional 89 landholders on 163,249 acres through its extension program. The projects is recognized under the 2009-2014 Alberta Strategy for the Management of Species at Risk (Fish and Wildlife Division 2008) as an efficient means to implement recovery and management actions for species at risk in the Grassland Natural Region.

The MULTISAR multi-species at risk conservation project includes three main program areas. 1) Its voluntary Conservation Program includes a core habitat stewardship component called "Habitat Conservation Strategies" (HCS), which entails detailed assessment of the vegetation, wildlife, fish and habitat components of priority lands in key species at risk areas, with the close participation of the land holder and/or manager(s). It results in the production of a conservation plan that harmonizes the needs of wild species and recovery actions for species at risk, along with the needs of the land holder for a sustainable ranching operation. The second component is an extension to the HCS and uses tools such as Species at Risk Conservation Plans and Beneficial Management Assessments for priority species or habitats to create awareness of ranch-

specific species at risk and key wildlife habitats and provides tips for their management and improvement. 2) The Education, Outreach and Awareness Program provides printed material (fact sheets on Beneficial Management Practices and Guide to living with species at risk) to land managers, as well as information brochures, a newsletter, a web page, a Facebook page, and Twitter feeds to increase public awareness of the prairie ecosystem, its importance, beauty and threats. MULTISAR also provides school programs on a responsive basis for increased exposure to youth. 3) The third program area is a Research, Monitoring and Evaluation Program where project data are collected, analyzed, and interpreted to assess the success of the three program areas and of the MULTISAR project at achieving the goal and objectives of the its Business Plan or to make needed adjustments.

The MULTISAR project is guided by the 2009-2014 Business Plan. The mission, vision and goals are:

Vision: Multiple species of wildlife, including species at risk, are effectively conserved at the landscape level, through a process that integrates landuse[1] management with fish and wildlife management principles, and in a manner that may contribute to the species and habitat recovery and to the sustainability of the rural economy.

Mission: To develop and implement the MULTISAR process which directs conservation of multiple species at risk, associated fish and wildlife and their habitats, within the Grassland Natural Region of Alberta.

Goal: To assist landowners and lessees to manage land to benefit provincial and federal species at risk, while maintaining an economically viable operation.

The following chapters outline the accomplishments for MULTISAR under these three project components for the fiscal year 2012-2013.

[1] Landuse management refers to both range management principals and management of the various land uses (including industrial developments) on the landscape.

2.0 EDUCATION, OUTREACH AND AWARENESS

2.1 Introduction

The MULTISAR Education, Outreach and Awareness program continued in its reduced capacity for 2012-2013 but remained very active. This past year marked the 10th anniversary of MULTISAR and many activities and products within this program were tailored or developed to highlight this milestone. In addition, it was the return of the Prairie Conservation and Endangered Species Conference to Alberta in February 2013 and MULTISAR was heavily involved in the organizing of this triennial conference and in the delivery of oral and poster presentations. MULTISAR also continued its participation in events such as the Grazing School for Women and Youth Range Days, watershed summits and education days, and other community events. This provided opportunities for presentations, education, tours and hands-on learning, while connecting with rural communities, and distributing education/extension material on species at risk and grassland management and supporting partners outreach programs whenever possible.

2.2 Landholder Awareness

2.2.1 At Home on the Range, Grassland Gazette, 10 Year Book and other Information Brochures

A total of 950 copies of MULTISAR's flagship booklet, *At Home on the Range: Living with Alberta's Prairie Species at Risk,* was distributed to landholder cooperators or mailed out to Alberta Environment and Sustainable Resource Development (ESRD) and county and municipal district offices, provincial parks and Members of the Legislative Assembly (MLAs) of Alberta constituency offices in the Grassland Natural Region. The booklet was also offered at a number of conservation group and landowner meetings and field tours throughout the year. A special 10 year anniversary edition of MULTISAR's newsletter, the *Grassland Gazette*, was produced in the fall of 2012. It described the beginning of MULTISAR, introduced the staff, featured the first HCS cooperator and a SARC Plan cooperator, highlighted the achievements over the period and speculated on the next 10 years of the project. In addition, a coffee table book called "MULTISAR - 10 years of collaboration was developed and printed. All 137 landowner cooperators and MULTISAR contacts received a copy of the 10 year book and the newsletter, while an additional 400 newsletters were distributed throughout southern Alberta. Moreover, 718 species at risk brochures and BMP fact sheets were handed out.

2.2.2 Southern Alberta Grazing School for Women

The 9th Annual Southern Alberta Grazing School for Women was held on July 25 - 26th, 2012 in the community of Delia. MULTISAR was one of the organizing partners again this year. This two day event included topics such as electric fencing, herd health, range and riparian health, weeds and invasive plants. This year, approximately 28 women attended the grazing school. MULTISAR had its display set up for one of the days and handed out various brochures and the At Home on the Range booklet.

2.2.3 Presentations to Landholder Groups

Presentations were given to landowner groups on four occasions. On June 15th, an overview of MULTISAR was given to two staff of the Canadian Cattlemen Association and potential for increased collaboration was discussed. On September 24th, a tour of MULTISAR's habitat enhancement projects in southeastern Alberta was given to two representatives of the Canadian Cattlemen Association and to two representatives of the Alberta Beef Producers. This included discussions on the program, other land uses and species at risk with three local landowners, two of which are MULTISAR cooperators. On November 9th, a presentation was given to 10 board members of the Alberta Beef Producers as an introduction to the MULTISAR project. On November 14th, a presentation on native grass restoration was given to a group of 60 landowners and members at the Foothills Restoration Forum.

2.3 Youth Education

MULTISAR was involved in youth education activities on three occasions, reaching a total of 109 individuals. Table 1 summarizes these activities.

Table 1. Summary of activities by MULTISAR associated with youth education.

Date	Event	Location	Type	Attendance
July 19th, 2012	Southern Alberta Youth Range Days (Milk River Watershed Council Canada	Rangeview Ranch, Carston County	Live presentation: Grassland birds	32 youth/families
September 24th, 2012	Riparian Education Day	Twin Butte	Field education program that highlighted the importance of riparian areas for wildlife species and species at risk	60 Junior High and High School students from Southwestern Alberta
December 17th, 2012	Jennie Emery School	Coaldale	Live presentation: Species at risk	17 students (grade 2)

2.4 Public Outreach

2.4.1 Conferences, Tours, Presentations and Displays

In 2012-2013, MULTISAR gave live and poster presentations, setup displays, and gave tours at 10 various regional, provincial, national and international events, directly reaching a minimum of 323 individuals, and receiving exposure from an unknown number of individuals at two conferences attended by a total of 1832 people. Table 2 summarizes these public outreach activities. MULTISAR was highly involved in the 10th Prairie Conservation and Endangered Species Conference and allocated over 550 hours of staff time organizing this event. During the conference, two MULTISAR landholder cooperators were presented with the Prairie Conservation Award for their stewardship efforts on their land. One of these awards is presented every three years in each of the three Prairie Provinces.

Table 2. Summary of public outreach activities by MULTISAR.

Date	Event	Location	Type	Attendance
April 4, 2012	Milk River Watershed Council Canada Annual General Meeting	Milk River	MULTISAR display	50 landowners and individuals from various interest groups.
April 19th, 2012	Meeting Buffalo Lake Naturalists	Stettler	Live presentation: native prairie, species at risk and the MULTISAR project	25 members
July 25th, 2012	Southern Alberta Grazing School for Women (2.2.2)	Delia	MULTISAR display	28 landowners/ land managers
August 10th, 2012	ACA Speaker Series	Writing-on-Stone Provincial Park	Live presentation: grassland birds	27 campground users
August 30th, 2012	ACA Speaker Series	Beauvais Lake Provincial Park	Live presentation: grassland birds	33 campground users
September 25th, 2012	Watershed Planning and Advisory Council Summit organized by the Milk River Watershed	Writing-on-Stone Provincial Park	Led 2 tours of MULTISAR habitat enhancement projects on two cooperators' properties	80 members from the eleven Watershed Planning and Advisory Councils in Alberta

Date	Event	Location	Type	Attendance
	Council Canada			
October 26, 2012	Green List Event; Oldman Watershed Council	Lethbridge	MULTISAR and Prairie Conservation Forum displays	70 individuals from urban area
January 28th, 2013	Alberta Endangered Species Conservation Committee	Edmonton	Presentation on the MULTISAR project	10 ESCC members
February 2-8, 2013	Society for Range Management Annual Meeting	Oklahoma City, OK	Poster titled: *Restoration of previously cultivated land in the dry mixedgrass natural subregion of Alberta.*	1450 individuals from North America, with some international attendees.
February 19-22	10th Prairie Conservation and Endangered Species Conference	Red Deer	Presentation titled: *MULTISAR: A look back on 10 years of collaboration* and two displays titled *MULTISAR: success stories* and *Restoration of previously cultivated land in the dry mixedgrass natural subregion of Alberta*	382 individuals from various interest groups (including producers) from across Canada (largely Prairie Provinces) and the United States.

2.4.2 Web Site and Social Media

The MULTISAR website (www.multisar.ca) continues to be the key portal where up-to-date information about the project, beneficial management practices (BMPs) for species at risk, as well as related documents, news events, and producer stories can be accessed.

This year MULTISAR moved into the world of social media by developing a Facebook page as well as setting up a Twitter account (@MULTISAR), providing recent photos and some quick updates related to the project.

2.4.3 Contacts and Outreach

Through the course of any fiscal year MULTISAR staff interacts on a daily basis with landholders and other individuals representative of a broad spectrum of sectors. Between April 2012 and March 2013, a total of 261 contacts were made with 883 people through direct visits, phone calls, e-mails, tours or presentations, cumulating to 290 hours (Table 3). Contacts with rural landholders to discuss the MULTISAR project, species at risk or various aspects of rangeland management made up 41% of all individuals reached. An unknown number of individuals saw poster presentations at two conferences that totalled 1832 people in attendance (not included in table 3).

Table 3. MULTISAR contacts for 2012-2013

Contact Type	# Contacts	# People
Academic	3	21
Company	4	4
Consultant	7	7
Contractor	9	10
Government	45	75
Individual (non-landholder)	9	9
Industry	4	8
Landholder	114	282
Landowner Group	2	88
Media	4	4
NGO	28	132
School	2	49
Other	30	194
Total:	**261**	**883**

2.4.4 Media and other Publications

MULTISAR received attention in 5 different articles from 4 different media (Table 4).

Table 4. Media exposure MULTISAR received in 2011-2012.

Media Name	Topic of Story	Date
RTW This Week (Alberta Agriculture)	"Get ahead of ground squirrels" (Ferruginous Hawk)	May 18-June 1, 2012
The Western Producer (Barb Glen)	"If you build it, they may come" (Ferruginous Hawk)	June 22, 2012
Farm Show	"Hawk Platforms Help Provide Gopher Control"	2012 - Volume #36, Issue #5, Page #8

Media Name	Topic of Story	Date
	(Ferruginous Hawk)	
Conservation Magazine (Lorne Fitch)	"The Balog Ranch" (MULTISAR cooperator)	Spring/Summer 2012
Conservation Magazine (Jeff Smith)	"A Pledge for the Prairies" (MULTISAR)	Fall/Winter 2012

An article titled *Restoring Mixed Grass Prairie in Southeastern Alberta, Canada* was written and submitted to the journal "Rangelands" on March 8th, 2013. Moreover, MULTISAR participated in developing the "wildlife" section in the second edition of the State of the Watershed report for the Milk River Watershed expected to be published in April 2013.

3.0 HABITAT CONSERVATION STATEGIES

3.1 Introduction

Conservation efforts to maintain and enhance wildlife habitat and rangelands for both species at risk and cattle production are the primary objectives of MULTISAR and the Habitat Conservation Strategy (HCS). The majority of the province's remaining native prairie is found in the Grassland Natural Region, where 75% of Alberta's species at risk can be found. Most of these native habitats are privately managed, being primarily used for livestock production. Efforts to maintain and enhance wildlife habitat for species at risk and rangeland sustainability can be achieved through a voluntary and collaborative approach with landowners and lease holders. The HCS team works together to balance the needs for healthy rangelands and quality fish and wildlife habitats through grazing recommendations and habitat improvement projects. The strategy is a result of detailed range, wildlife and riparian inventories and assessments, from which management goals and objectives can be made.

3.2 HCS Process

The foundation of a HCS is its team members. Landholders, as well as both government and non-government agencies make up the team and include members from Alberta Environment and Sustainable Resource Development, Alberta Conservation Association, Prairie Conservation Forum and any other organizations that are stakeholders in the property.

Management objectives and the implementation of conservation efforts are developed by the entire MULTISAR HCS team and address wildlife, habitat, range, riparian and land management objectives identified for a particular land base. Management and habitat enhancement recommendations are based largely on the recovery actions for species identified as a priority on the land and from MULTISAR's Beneficial Management Practices document (RCS Ltd. 2004).

For a complete and detailed description of the entire HCS process, refer to MULTISAR's 2010-2011 progress report (Rumbolt et al 2011). Detailed survey methodologies used in HCSs can be found in MULTISAR's 2011-2012 progress report (MULTISAR 2012).

3.3 HCS Achievements for the fiscal year 2012-2013

To date, MULTISAR has completed 25 HCSs on 269,712 acres of land within the Milk River, Pakowki and St. Mary's River Basins (Table 5). In 2012, MULTISAR completed

HCSs for three new properties in the Milk River Basin, totaling 12,983 acres. Work on these properties included detailed wildlife, range and riparian inventories.

Table 5. Habitat conservation strategy participant summary.

Year*	# Landholder Participants	Acres Surveyed
2004	2	60,528
2005	1	160
2006	2	79,091
2007	2	48,667
2008	2	7183
2009	3	38,515
2010	5	4677
2011	5	17,908
2012	3	12,983
Total	25	269,712

*HCS were counted in the year in which field work was initiated, however, some surveys continued for more than one year.

In 2006, MULTISAR absorbed the Western Blueflag Program and its 8 participating landholders. These properties did not have a HCS completed and therefore they are not included in this total.

In 2011 and 2012, two HCSs that have been implemented for five years were reassessed (Table 6). These reassessments entailed survey of a subsample of the original range and wildlife inventories, as well as a complete re-assessment of riparian health. More detailed on these reassessments can be found in Section 5.0.

Table 6. Habitat conservation strategy reassessment summary.

Year of HCS reassessment	MULTISAR Participant	Size of Property (ac)
2011	MP_1	60,228
2012	MP_4	11,076

3.3.1 Wildlife

To date, approximately 39,643 wildlife observations (4,953 in 2012) have been submitted to the Fish and Wildlife Management Information System (FWMIS) since 2004. In 2012, 42 different species at risk were detected on HCS properties. Table 7 summarizes the main findings from the properties assessed during the 2012 field season.

Table 7. Species at risk recorded during the 2012 Habitat Conservation Strategy field season.

Species	General Status[2]	Legislative Status[3]	# of Observations	Feature	Significance
Burrowing Owl	At Risk	Endangered	5 (2 adults, 3 young)	1 Nest Burrow	
Ferruginous	At Risk	Endangered	7	2 Nests	One historic

[2] Alberta General Status (ASRD 2010)

[3] Legislative Status for Canada's Species at Risk Act (EC 2012) or Alberta Wildlife Act (GOA 2012)
N/A = Not Assessed

Species	General Status[2]	Legislative Status[3]	# of Observations	Feature	Significance
Hawk					nest and one new nesting site
Northern Leopard Frog	At Risk	Special Concern	2		
Short-horned Lizard	At Risk	Endangered	4		One sighting at a property where previously unrecorded
Barn Swallow	Sensitive	Threatened	15 + 1-20 (colony; all life stages)	1 Colony	
Bobolink	Sensitive	Threatened	1		
Chestnut-collared Longspur	Sensitive	Threatened	1607		
Common Nighthawk	Sensitive	Threatened	4		
Long-tailed Weasel	May be at Risk	N/A	2		
Plains Spadefoot	May be at Risk	N/A	22	Several breeding sites	
Prairie Ratttlesnake	May be at Risk	Data Deficient	5		
Short-eared Owl	May be at Risk	Special Concern	2		
Sprague's Pipit	Sensitive	Threatened	200		
American Badger	Sensitive	Special Concern	3		
Baird's Sparrow	Sensitive	N/A	394		
Bald Eagle	Sensitive	Not at Risk	1		
Baltimore Oriole	Sensitive	N/A	16		
Black-crowned Night Heron	Sensitive	N/A	10		
Brewer's Sparrow	Sensitive	N/A	118		
Bullsnake	Sensitive	N/A	2		
Common Yellowthroat	Sensitive	N/A	7		
Golden Eagle	Sensitive	Not at Risk	2		
Grasshopper Sparrow	Sensitive	N/A	46		

Species	General Status[2]	Legislative Status[3]	# of Observations	Feature	Significance
Great-blue Heron	Sensitive	N/A	6 adults, 3 young	Rookery	
Green-winged Teal	Sensitive	N/A	10		
Least Flycatcher	Sensitive	N/A	1		
Long-billed Curlew	Sensitive	Special Concern	28		
McCown's Longspur	Sensitive	Special Concern	165		
Northern Harrier	Sensitive	Not at Risk	29		
Northern Pintail	Sensitive	N/A	76		
Pied-billed Grebe	Sensitive	N/A	1		
Plains Garter Snake	Sensitive	N/A	5		
Prairie Falcon	Sensitive	Special Concern	1	1 Nest	
Pronghorn	Sensitive	N/A	64		
Rusty Blackbird	Sensitive	Special Concern	1		
Sharp-tailed Grouse	Sensitive	N/A	14	1 Lek	Historic lek
Sora	Sensitive	N/A	6		
Swainson's Hawk	Sensitive	N/A	14		
Upland Sandpiper	Sensitive	N/A	10		
Western Grebe	Sensitive	N/A	1		
Western Tanager	Sensitive	N/A	1		
Western Wood -pewee	Sensitive	N/A	1		

3.3.2 Range

The three HCS properties assessed in 2012 displayed a wide range of diversity in the plant communities and range health. MULTISAR conducted at total of 143 detailed range transects (vegetation inventories), 148 range health assessments and 26 tame pasture assessments (Table 8) during the 2012 field season. During these inventories, one rare plant species, red three-awn, was observed on one of the properties.

Table 8. Summary of range work completed by MULTISAR during the 2012 Habitat Conservation Strategy field season.

Property	Acres	Sites Assessed	# Plant Communities	Rare Plants
MP_23	2,800	43 detailed transects, 46 range health assessments	34	
MP_24	947	12 detailed transects, 8 range health assessments, 9 tame pasture assessments	16	2 observations of red three-awn
MP_25	9,236	88 detailed transects, 94 range health, 17 tame pasture assessments	40	

3.3.3 Riparian

The Alberta Habitat Management Society – Cows and Fish, was contracted to complete riparian health assessments on 7 sites located along the Milk River and Ross Creek in 2012. The six sites along the Milk River had been assessed by Cows and Fish in the past, which provided the added benefit of having historic information for comparison with current findings.

3.3.4 Wildlife and Range Health Inferences

Analysis of data gathered from the wildlife, range and riparian health assessments on each property, allows MULTISAR to make inferences regarding the range and riparian health of a site and the corresponding wildlife and habitat features observed. Using this information, management plans were created for each property, incorporating beneficial management practises for each management unit that promote sustainable ranching and habitat for species at risk.

3.3.5 Implementation of HCS Habitat Enhancements

In 2012, ten new habitat enhancements were implemented as a result of recommendations identified in Habitat Conservation Strategies. Habitat enhancement projects completed in 2012 include the reseeding of 480 acres back to native grasses, 160 acres that were seeded with purple prairie clover, and 1,000 silver sagebrush and 200 thorny buffaloberry shrubs were planted for the improvement of greater sage-grouse and loggerhead shrike habitat, respectively. Approximately 21 km of smooth bottom wire was added to existing fences to help promote wildlife friendly fencing and facilitate pronghorn movement. This 21 km does not include the fencing completed by the Alberta Fish and Game Association on MULTISAR participant properties (See Section 5.3.4). Fencing was also installed around cottonwood saplings along the Milk River for protection against cattle, while mature trees were wrapped with wire to reduce removal by beavers. Other enhancements

implemented included weed control to help reduce Canada thistle invasion, two ferruginous hawk nesting platforms installed, and two upland watering sites were developed to help improve livestock distribution and reduce impact to natural water bodies by watering cattle. Since 2005, MULTISAR has completed 69 habitat enhancement projects with cooperating landholders, the details of which are summarized in Figure 1.

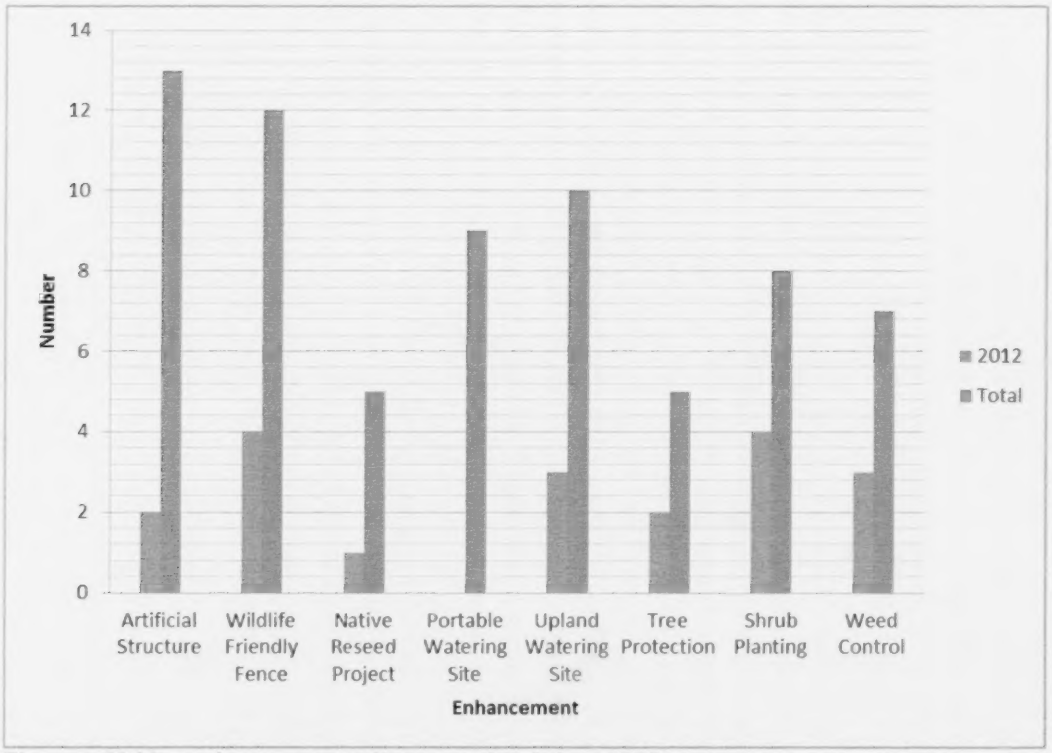

Figure 1. Habitat enhancement projects completed since 2005.

The continued monitoring and evaluation of habitat enhancement projects demonstrate that these improvements are having a positive impact on targeted habitat and wildlife. Section 5.0 discusses in more detail MULTISAR's monitoring and evaluation process and the positive results that are being seen on the landscape as a result of these enhancement projects.

3.4 Conclusion

Over the last 10 years, MULTISAR has become increasingly recognized and its HCS work has grown tremendously throughout the St Mary's River, Pakowki Lake and Milk River basins. MULTISAR has developed plans for approximately 269,712 acres of land, of which a large portion is interconnected, allowing for landscape planning versus single property initiatives. MULTISAR will continue its efforts to engage landholders within priority species at risk areas and seek to "connect" additional land adjacent to active HCS

properties. MULTISAR has and will continue to provide open communication, information and awareness, team-based wildlife habitat planning, and will continue to build long-term relationships with land users including landholders, government, non-government organizations, and industry.

4.0 SPECIES AT RISK CONSERVATION PLANS

4.1 Introduction

In 2012-13, MULTISAR added a new series of tools to its extension program to influence rangeland management and benefit prairie wildlife habitats. Species at Risk Conservation (SARC) Plans were introduced in 2007 as an extension of the MULTISAR Habitat Conservation Strategy (HCS). They are a more condensed and accelerated version of the HCS applied at the ranch level and delivered throughout the entire Grassland Natural Region (GNR) and the adjacent Rocky Mountain and Parkland Natural Regions.

Following a large demand for species specific or habitat specific management tools, MULTISAR introduced its Beneficial Management Practices (BMP) assessments in 2012-2013. Over the years, MULTISAR staff have been approached by landowners wanting to complete specific habitat improvements on their properties (e.g., installation of hawk nesting poles, water developments, etc), but were not interested in having their entire property assessed through a traditional SARC Plan. They were focused on one aspect of their operation or one species or group of species and wanted guidance on that specific topic. For this reason, BMP specific assessments were developed that focused solely on the proposed habitat improvements or on the habitat requirement of species of interest.

4.2 SARC Plan/BMP Assessment Process

The MULTISAR SARC Plan process is divided into 6 steps; 1) identification of priority lands, 2) landholder contact 3) preliminary background research, 4) on-site habitat assessment, 5) SARC Plan development and delivery, and 6) follow up. For a complete account of the SARC Plan process, please refer to the 2010-2011 MULTISAR Progress Report (Rumbolt *et al.* 2011).

Of the six steps noted above, the BMP assessment follows the same processes as the SARC Plan, except for step one. These assessments are normally completed in response to a landowner's request as opposed to the active solicitation involved with the SARC Plan program.

4.3 Achievements

Since the inception of the SARC Plan program in 2007, 77 assessments (5 in 2012-2013) have been completed throughout the GNR covering a total area of 149,784 acres (2828 acres in 2012-2013).

For the 5 SARC Plans (2828 acres) completed by MULTISAR this year, BMPs were recommended for the following species and groups of species:

1. Raptors – 5 (2336 acres)*
2. Grassland Birds – 5 (1694 acres)
3. Amphibians – 3 (784 acres)

* BMP recommendations for species/groups of species are not mutually exclusive.

This was the first year that BMP specific assessments were completed. A total of 12 BMP assessments (13,465 acres) were completed, all of which were completed for landowners who wanted to install an artificial hawk nesting platform, with interest in controlling Richardson's ground squirrels on their property in an ecological manner.

Several habitat improvements that were developed as demonstration sites on SARC Plan co-operator properties were monitored this year and will continue to be monitored on a regular basis to ensure that they achieve their objectives. Habitat improvements monitored included a nesting platform erected for ferruginous hawks and two wetland and riparian fencing projects. Yearly discussions with the landowners will help determine the success of these improvements, not only in creating and maintaining wildlife habitat, but additionally, in how they may have impacted cattle operations, either positively or negatively.

Through the SARC Plan Program, MULTISAR has been evaluating landholders' awareness, use of BMPs, and perceptions towards species at risk using a standardized questionnaire. Of the 5 SARC Plans, 5 questionnaires were completed in 2012-2013 and results were similar to those in previous years in that perceptions towards species at risk were largely positive. Appendix A summarizes the answers to key questions on the questionnaire from 2012-2013 participants. Results show the perceptions and awareness of landholders towards species at risk. Only 40% of the respondents believed that wildlife were beneficial to their operation, although 80% believed that they could run a profitable operation while managing with wildlife in mind. All landholders (100%) thought that their land was important for species at risk and other wildlife, and a large proportion (80%) were able to list some of the species at risk their ranch provided habitat for. Although all respondents were unsure if species at risk legislation, such as the *Alberta Wildlife Act* or the federal *Species at Risk Act*, is a benefit or detriment to them and their operation, most (80%) agreed that species at risk should be protected by law. The results of the survey also showed that most participants (80%) believed that they were already making adjustments in their operation for species at risk.

All of the landholders are already using important BMPs such as maintaining native prairie and using rotational grazing. However, there are still many important practices that are not often used, such as fall seeding crops and delaying fieldwork until wildlife have finished nesting. Possible reasons for the limited use of these practices may be due to a lack of awareness on the part of the landholder or the belief that many of these BMPs have an undesirable cost or inconvenience associated with implementing them.

4.4 Conclusion

Since their inception in 2007, interest in SARC plans has gradually grown among landholders. In the first few years of the program, landowners previously known to staff were approached. Word of mouth between neighboring landowners as well as the communication work of the extension program helped to engage even more landowners. In the last few years, interest in the program seems to have shifted from full SARC Plans to BMP or species specific assessments.

From the lack of uptake of our past spring mailout promoting SARC Plans, and the interest generated by articles profiling the ecological and operational benefits of an individual species at risk BMP, it appears that landowners are more likely to adopt habitat improvements when they provide tangible benefits to their operation. This past year, all the BMP assessments were targeted at the ferruginous hawk, an endangered species in the province. Providing artificial nesting platforms for the species at suitable locations, can not only assist with the recovery of this species where nesting structures are limited or failing, but will also provide a mean of controlling ground squirrel populations locally; a welcome ecological benefit to landowners. MULTISAR will try to tailor its future products and services to respond to that apparent need.

MULTISAR staff periodically evaluate the various approaches to find the most efficient method by which to engage landowners in the program. In 2012-2013 40% of landholders who agreed to have SARC Plan assessments completed were the result of referrals from neighbours who have had a SARC Plan completed for them. Forty percent (40%) of this year's co-operators were referred from other organizations (ESRD and ACA), while 20% found out about the program through the MULTISAR website. Of the 12 BMP assessments completed, all 12 landowners contacted MULTISAR after reading one of two printed articles (hawk pole brochure and Western Producer article). This shows that print ads and articles can work in attracting attention to the program, and may have to be addressed further in order to attract attention to SARC Plans.

5.0 HCS EVALUATION AND MONITORING PROGRAM

5.1 Introduction

Conservation groups continue to face the challenge of demonstrating to stakeholders that projects are accomplishing their objectives and goals. Without effective evaluations or monitoring there is no systematic way of measuring the effects of the project (Margoluis and Salafsky 1998).

However, to establish a sound monitoring program for your project, many questions need to be asked and addressed: What should be evaluated and why is it important? How and where should the evaluation and/or monitoring be conducted? What kind of costs and time constraints will be associated with this work (Johnson 2000)? What type of design will give me meaningful data to work with? How do I analyze the data once collected? How can I make my findings useful or beneficial to my project goals and objectives?

Margoluis and Salafsky (1998) state that an effective evaluation and monitoring plan identifies stakeholders, strategies to collect data, indicators that will be measured, and a timeline as to how, when, and by whom the data will be collected. Johnson (2000) suggests that the design of an evaluation/monitoring program should also focus around the objectives with the highest priority or concern.

The following sections will provide a brief synopsis of MULTISAR's Evaluation and Monitoring protocols and outcomes for the Habitat Conservation Strategy (HCS) component of the MULTISAR project for the year 2012-2013. Details on the statistical analysis of the existing data collected as well as recommendations for future monitoring data collection mitigations will be discussed.

5.2 Evaluation of the HCS component of the MULTISAR Project

It was determined that an evaluation of each HCS completed for the MULTISAR project was to occur five years after its implementation (Downey et al. 2011). The main focus of this evaluation was to measure how effective the HCSs were in influencing habitat management, habitat value for species at risk and landholders' perceptions of species at risk (Downey et al. 2011). In the spring and summer of 2012, MULTISAR's second HCS was re-evaluated (hereafter referred to as MP_4).

5.2.1 Evaluation Process for 2012

During re-evaluation on each HCS the following metrics are examined: Range health and riparian health (when applicable), Wildlife diversity, and use of Wildlife Best Management Practices (BMP), landholders' perspectives on the HCS process and its recommendations, and change in species at risk.

In 2012, the range health (RH) of native and tame pastures on MP_4 was evaluated by completing range health assessments at baseline (original) range health transect locations ensuring at least one assessment was completed in each management unit. Due to the vastness of this property, no detailed transects were completed during the reassessment. Final sample sizes for native and tame pastures, was 94 and five (5) respectively. Range health (RH) scores were then compared to the objectives in the HCS: "maintain" (n = 78 native RH; n = 4 tame pasture RH), "increase" (n = 14 native RH; n = 1 tame pasture RH) or "decrease" (n = 2 native RH; n = 0 tame pasture RH) in range health to attain specific wildlife and cattle operation desired effects.

Due to the nature of the methodologies used to capture wildlife information for MP_4's initial HCS, the re-evaluation was performed slightly differently than intended for the overall evaluation of the project. In the baseline years, the main wildlife surveys (multi-species point counts) were conducted primarily along grid transects. The most current method is polygon based. In order to make comparisons, the 2012 surveys had to mirror as much as possible baseline methodologies. However, while adhering to this criterion, wildlife survey points count locations were also selected based on the following conditions to emulate MULTISAR's current methods:

At least one wildlife point fell within the same GVI polygon as a 2012 range health reassessment location did. Point count boundaries did not span more than one GVI polygon.

Riparian health was reassessed by the Alberta Riparian Habitat Management Society (hereafter called Cows and Fish). Cows and Fish re-examined one historic riparian polygon along the Milk River (riparian health and a large river health assessment) and four historic riparian health polygons along one if its tributaries. Despite survey methodologies from baseline year (2007) to current year (2012) being slightly different; comparisons were made on overall results for health conditions.

MP_4's landholder participated in a questionnaire to document changes (positive or negative) in attitudes, and knowledge of species at risk and range management. The questionnaire also queried the partnership with MULTISAR and whether they have experienced a benefit from the collaboration.

Achievement of MULTISAR's project goals was measured based on the following: desired range and riparian health is occurring, desired wildlife species are occurring or increasing on the site, recommendations in the HCSs are being followed, enhancements are having the desired effect, and MULTISAR is increasing awareness and knowledge about species at risk and is found to be beneficial to the ranching community.

5.2.2 Evaluation Results for 2012

5.2.2.1 *Range*

MP_4 was re-evaluated five years after the HCS began being implemented. Across all sites revisited, overall native range health has increased from 81.99% to 85.35%. Upon comparing the 78 range health assessments associated with "maintaining" range health, it was determined that there was not a significant difference between the range health scores from the baseline years and evaluation year (Table 9). The tame pasture range health scores associated with "maintain" current health increased. Encouragingly, the mean native range health assessment score for baseline years of transects desired to "increase" in range health did increase by roughly 21% and the one tame pasture range health desired to "increase" did drastically by improving by 33%. In addition, the two locations on MP_4 determined to require a "decrease" in range health to achieve desired habitat criteria for specific wildlife priorities or management recommendations described in the HCS report had the following results: One health assessment did decrease from 97% to 90% and one increased from 75% to 87%. No tame pastures were recommended in the HCS to decrease in range health.

Table 9. Range health results for re-evaluation of MP_4 in 2012.

n	Baseline Year Range Health % avg	Evaluation Year Range Health % avg	Desired Effect/Trend Occurring
Native: "Maintain" 78	85.28	85.46	Yes
Tame: "Maintain" 4	78.50	84.75	Yes
Native: "Increase" 14	63.14	84.29	Yes
Tame "Increase" 1	58	91	Yes
Native: "Decrease" 2	86	88	Unknown

5.2.2.2 Riparian

Five riparian health assessments (1 on Milk River, 4 on a tributary) were compared based on their health rating percentages from baseline year (2007) to evaluation year (2012). It was determined that there was a slight negative shift in health for all of the polygons except for one. The major reasons for score degradation in 2012 included physical alterations to the site (bank erosion from loss of deep binding root mass protection, high browse pressure on preferred woody species, livestock water access points, trails, etc.), and increased presence of invasive species. The one site that improved, increasing in health from 84% to 87%, had good shrub species regeneration, little evidence of shrub browse, and had increased in vegetative cover from 80% to 100%. The mean health

score for the tributary in 2007 was 79% ("Healthy but with problems"; ranging from 72-88%) compared to 74.8% ("Healthy but with problems"; ranging from 67 to 78%) in 2012 with one of the polygons changing range health categories, from "Healthy" to "Healthy with problems". This downward trend in observed health change is not statistically significant.

The Milk River site is influenced by the fluctuating water flows due to the St Mary's River diversion. In 2007, only a lotic inventory was completed and in 2012 both a lotic and a large river health assessment were completed. Scores in 2012 have decreased from 74% to 63% but have remained in the "Healthy but with problems" category. Positive observations include the findings of cottonwood seedlings and higher shrub percentages and lower browse pressures in 2012. One of the most noticeable changes is the large increase in the presence of invasive species, with Canada thistle being the most predominant.

5.2.2.3 Wildlife

Several wildlife surveys from the baseline years on MP_4 were repeated in 2012. For this report focus will be on multi-species point count surveys. Comparisons on species richness and species diversity were evaluated from baseline year to assessment year.

One hundred and fourteen (114) multi-species survey point counts were completed across MP_4. Species richness per stop has increased slightly in the evaluation year but was not significantly different from the baseline year. Species diversity (n = 99) also increased from baseline year to evaluation year but change was also not significant.

In the baseline year, species seen the most frequently included western meadowlark (*Sturnella neglecta*), chestnut-collared longspur (*Calcarius ornatus*), Sprague's pipit (*Anthus spragueii*), and horned lark (*Eremophila alpestris*) (Table 10). The most individual animals seen were Richardson's ground squirrels (*Urocitellus richardsonii*) and chestnut-collared longspurs. In the evaluation year, five grassland bird species, including the chestnut-collared longspur, horned lark, savannah sparrow (*Passerculus sandwichensis*), vesper sparrow (*Pooecetes gramineus*), and western meadowlark as well one mammal, the Richardson's ground squirrel, were documented the most frequently. The most observed wildlife species in 2012 was the boreal chorus frog (*Pseudacris maculata*) and the Richardson's ground squirrel. Recommendations for the pastures associated with these multi-species point counts included areas desiring an increase and/or maintenance of range health as well as areas decreasing in range health to attain specific habitat functions for livestock and wildlife species.

Table 10. Species most often recorded (n >50) during multi-species point count surveys for MP_4 re-evaluation sites.

Species	Baseline Years 2006/2007 Times Observed	Baseline Years 2006/2007 Numbers Observed	Evaluation Year 2012 Times Observed	Evaluation Year 2012 Numbers Observed
Western Meadowlark	90	135	69	122
Chestnut-collared longspur	72	205	72	352
Sprague's Pipit	72	100	<50	
Horned Lark	68	195	64	223
Vesper sparrow	<50	68	65	120
Savannah sparrow	<50	<50	60	142
Richardson's ground squirrel	<50	511	52	422
Baird's sparrow	<50	<50	<50	74
Boreal chorus frog	<50	<50	<50	823
Brewer's blackbird	<50	<50	<50	52

5.2.2.4 Questionnaire

Overall, the results of the questionnaire completed for MP_4 was very positive. The landholder valued the friendly and collaborative work that MULTISAR has provided and appreciates MULTISAR's multi-partner and grassroots approach. The landholder has had an increased appreciation for species at risk and beneficial management practices. MP_4 has used the HCS document as a tool to aid with his grazing management and truly believes that species at risk should be viewed as an asset and not a liability. The MP_4 landholder was and is still willing to complete projects that help benefit cattle operations as well as wildlife. The landholder liked the idea of having evidence through completing an HCS that he is making an effort towards due diligence for species at risk protection. The landholder however still had some reservations about what the federal government can enact and what this would mean for his ranching operation. The MP_4 landholder without hesitation, agreed to voluntarily work with MULTISAR for another 5 years.

5.2.3 Concluding Remarks

For the MP_4 property, it was determined that range health has generally increased and that wildlife species recorded has maintained diversity. While examining the data, it was determined that Sprague's pipits have decreased since 2006/2007 but range health has improved. Factors surrounding and causing this is unknown and should be further investigated. In the forthcoming years, based on knowledge acquired through this re-evaluation process, modifications will be made to allow for improved assessment of HCSs and their recommendations and desired outcomes for each property.

5.3 Monitoring Habitat Enhancements on HCS Properties

Based on recommendations founds within HCS reports, enhancements have been applied on several properties. Monitoring of these habitat enhancements will allow MULTISAR staff to measure whether enhancements are having the desired effect, and what changes may be necessary to ensure the desired effects are achieved.

Monitoring is the periodic collection of data to determine if activities are accomplishing the project goals and objectives. Monitoring enhancements can help aid in the evaluation process (Margoluis and Salafsky 1998). Problems and corrective actions identified during monitoring can help mainstream future enhancements and or monitoring protocols. However, determining the success of an enhancement can be a complex question since the habitat manipulation (enhancement) can cause varied effects and effects may not be linked to the manipulation (Fletcher et al. 2007). The following will be a description of the current MULTISAR monitoring program and recommendations for improvement to better link enhancement effect on species at risk habitat. In 2012, MULTISAR monitored more than 30 distinct enhancement projects that were implemented on 12 different properties as a result of HCS recommendations.

5.3.1 Restoration Projects

Conversion of cropland back to native grasses can benefit a suite of species at risk. Monitoring of enhancements projects that involve native grass reseeding will be completed every year, and up to five years post application, as considerable time and money are spent on these types of projects. For detailed objectives and desired measures of success for MULTISAR restoration projects see Downey et al. 2011 Section 5.3.1. Monitoring at three MULTISAR reseeding projects was conducted in 2012, the results of which are summarized in Tables 11 and 12.

Based on the data collected during range and wildlife surveys on MULTISAR's first reseeding project (MP_7_RP_01), it appears that the habitat continues to transition closer to a more native state. There is a shift in grass and forb species dominance towards a restored native habitat and coinciding increased wildlife diversity. Litter on this reseeded site has increased dramatically and in some locations to three times as much in two growing seasons. Range health scores have decreased slightly, but not significant enough to show up statistically.

Two new reseeding projects (RP), one on MP_18_RP_01 and another one on MP_7_RP_02, both in the Dry Mixedgrass Subregion of the province, were implemented in 2011-2012 and monitoring began in the spring and summer of 2012. MP_2_RP_01 has changed ownership therefore its restoration project was not evaluated this year.

Table 11. Restoration project monitoring range component.

Site	Reseed Date	Size (ac)	Target Species	Dominant Grass and Forb Species Present	Baseline Year %	Current Year %	Baseline Litter lbs./ac	Current Year Litter lbs./ac	Desired Effect/Trend Occurring
MP_7_RP_01	April 2008	140	Grassland Birds	Western/Northern Wheatgrass (*Agropyron smithii dasystachium*)	9.6	14.7	203 (year: 2010*)	626	Yes
				Blue Grama Grass (*Bouteloua gracilis*)	4	6.9			
				June Grass (*Koelaria macrantha*)	0.5	6.7			
				Needle and Thread Grass (*Stipa omata*)	trace	1.2			
				Yellow Sweet Clover (*Melilotus officinalis*)	0	6.7			
				Tufted Fleabane (*Erigeron caespitosus*)	2.4	0			
MP_7_RP_02	June 2011	200	Grassland Birds	Western/Northern Wheatgrass	Was agricultural prior to seeding	5.5	unknown	172.5	Unknown, too early to determine
				June Grass		4.3			
				Blue Grama Grass		3.8			
				Wild Oat (*Avena fatua*)		1.8			
MP_18_RP_01	Fall 2011	480	Grassland Birds Greater Sage Grouse	Wild Oat	All 3 quarters were previously agricultural prior to seeding	8.1	unknown	460 avg	Unknown, too early to determine
				Volunteer Wheat (*Triticum aestrivum*)		6			
				Western/Northern Wheatgrass		2			
				Prickly lettuce (*Lactuca serriola*)		2.1			
MP_18_RP_01	Spring 2012	480	Grassland Birds Greater Sage Grouse	Volunteer Wheat	All 3 quarters were previously agricultural prior to seeding	4.5	unknown	372 avg	Unknown, too early to determine
				Kochia (*Kochia scoparia*)		4.3			
				Pigweed (*Amaranthus spp.*)		2.7			
				Western/Northern Wheatgrass		1.4			
				Blue Grama Grass		0.8			

RP = reseed project *= no information from 2008 baseline year

Table 12. Restoration project monitoring, wildlife component.

Site	Baseline year	Most Current Year	Desired Effect/ Trend Occurring
MP_7_RP_01	**2007** Horned lark McCown's longspur Willet	**2012** Baird's sparrow Boreal chorus frog Coyote Grasshopper sparrow Horned lark Lark bunting Long-billed curlew Marbled godwit Pronghorn Red-winged blackbird Richardson's ground squirrel Savannah sparrow Sora Sprague's pipit Vesper sparrow Western meadowlark Willet Wilson's phalarope	**Yes**
MP_7_RP_02	**2007** Horned lark Marbled godwit Swainson's hawk Vesper sparrow Western meadowlark	**2012** Boreal chorus frog Chestnut-collared longspur Common nighthawk Horned lark Long-billed curlew Red-winged blackbird Sora Savannah sparrow Vesper sparrow Western meadowlark Willet Wilson's snipe	**Yes**
MP_18_RP_01 **Fall seeding**	**2011** American crow Brewer's blackbird Canada goose Chestnut-collared longspur Clay-colored sparrow Horned lark McCown's longspur Mourning dove Northern harrier Northern pintail Richardson's ground squirrel Savannah sparrow Vesper sparrow Western meadowlark Willet	**2012** Boreal chorus frog Brewer's blackbird Brewer's sparrow Chestnut-collard longspur Horned lark Killdeer Long-billed curlew Marbled godwit McCown's longspur Pronghorn Red-winged blackbird Savannah sparrow Sora Vesper sparrow Western meadowlark Wilson's phalarope Wilson's snipe Yellow-headed blackbird	**Trend is upward**

Site	Baseline year	Most Current Year	Desired Effect/ Trend Occurring
MP_18_RP_01 Spring seeding	**2011** Blue-winged teal Boreal chorus frog Canada goose Horned lark Killdeer Lark bunting Mallard Marbled godwit McCown's longspur Northern pintail Northern shoveler Red-winged blackbird Vesper sparrow Western meadowlark Willet Yellow-headed blackbird	**2012** American crow Badger Black-billed magpie Boreal chorus frog Brewer's blackbird Canada goose Clay-collared sparrow Common nighthawk Horned lark Long-billed curlew McCown's longspur Pronghorn Richardson's ground squirrel Vesper sparrow Western meadowlark	**Unknown but there are fewer wetland associated species.**

5.3.2 Shelterbelt and Shrub Planting

Shelterbelts and shrub planting can increase nesting habitat for a variety of wildlife species such as ferruginous hawks and loggerhead shrikes, and increase forage/winter habitat for sage grouse, sharp-tailed grouse and pronghorn. Shrubs will be monitored yearly for the first five years, to determine establishment and growth. See Downey et al. 2011 Section 5.3.2 for more detailed objectives and desired measures of success for shelterbelt and shrub planting.

In 2012, MULTISAR planted silver sagebrush plugs in two new locations both of which are also reseed projects: on MP_7_SSP_02 and MP_18_SSP_01 in the spring of 2012. In addition, native sagebrush seed, which was hand collected, was dispersed on both of these locations. In addition to these plantings, four sites were monitored either visually or by incorporating line intercept transects to tally shrubs. (Table 13).

Table 13. Shelterbelt and shrub monitoring.

Enhancement Project	Target Species	Shrub Species Planted	# Shrubs Planted	Date Planted	Date Monitored	Latest Assessment		Desired Effect/Trend Occurring and Comments
						Survivability	Crown Cover (avg)	
MP_4_SSP_02	Loggerhead Shrike Grassland Birds	Chokecherry (*Prunus virginianus*),	50	May 2011	July 2012	No planted shrubs found alive	—	No, however this is a yard site with lots of caragana (*Caragana* spp.) and non-native grasses growing.
		Thorny Buffaloberry (*Sheperdia argentea*)	30			No planted shrubs found alive	—	

Enhancement Project	Target Species	Shrub Species Planted	# Shrubs Planted	Date Planted	Date Monitored	Latest Assessment		Desired Effect/Trend Occurring and Comments
						Survivability	Crown Cover (avg)	
MP_4_SSP_01	Loggerhead Shrike Grassland Birds	Chokecherry	200	April 2010	July 2012	No planted shrubs found alive	—	No, however there are other shrubs present such as greasewood (*Sarcobatus vermiculatus*)
		Thorny Buffaloberry	200			No planted shrubs found alive	—	
MP_13_SSP_01	Sage Grouse, Pronghorn	Silver Sagebrush (*Artemesia cana*)	400	May 2011	June 2012	Very few	63 cm (widest point of shrubs but only 2 were found)	Too early to determine results yet
		Chokecherry	50	May 2011	June 2012	No planted shrubs found	Unknown	Unknown
		Thorny Buffaloberry	70	May 2011	June 2012	Several found	16.5 cm (widest point of shrubs)	Yes
MP_7_SSP_01	Sage Grouse, Pronghorn	Silver Sagebrush	148	May 2010	June 2012	Yes	32 cm (widest point of shrubs)	Yes
MP_7_SSP_02	Sage Grouse, Pronghorn	Silver Sagebrush plugs and seed	800 plugs 50 lbs. seed	May 2012	To be monitored in 2013	N/A	N/A	N/A
MP_18_SSP_01	Sage Grouse, Pronghorn	Silver Sagebrush plugs and seed	200 plugs 50 lbs. seed	May 2012	To be monitored in 2013	N/A	N/A	N/A

5.3.3 Artificial Nesting Structures

Artificial structures are used by MULTISAR in areas which have potential to support raptors at risk without negatively impacting other species at risk. Artificial structures include raptor nest poles and burrowing owl burrows. Refer to Section 5.3.3 of Downey *et al.* 2011 for objectives and desired measures of success for all of MULTISAR's artificial structures.

Older artificial nesting structures monitored in 2012 included two burrowing owl artificial burrows and two nest poles for ferruginous hawks. Three new nest poles were installed on MP_8 in February 2012 and were also monitored for use as well as surveyed for ground squirrel activity in the area. In March 2013, two more nest poles were installed at MP_26 and will be monitored for use in the spring and summer of 2013. In the spring of 2012, two bat boxes were mounted on trees at MP_9 and were monitored with the use of a bat detector (Table 14).

Table 14. Artificial nesting structure monitoring.

Landholder	Enhancement	Target Species	Year Implemented	Evidence of Use	Species Using Structure	Desired Effect/Trend Occurring
MP_2_AS_01 (a+b)	Two Burrowing Owl Burrows	Burrowing Owl	2008	Entrances opened in summer of 2012 after being closed since 2009	N/A	N/A
MP_5_AS_01	Nest Pole	Ferruginous Hawk	2007	Yes Active nesting for the first time since 2007	Ferruginous hawk pair + 2 YOY	Yes
MP_5_AS_02	Nest Pole	Ferruginous Hawk	2007	Yes Active nesting 3rd year in a row	Ferruginous hawk pair + 3 YOY	Yes
MP_8_AS_01-03	3 Nest Poles	Ferruginous Hawk	2012	Yes 2 of 3 had active nests. One nest not active.	Ferruginous hawk pair with 5 YOY and the second pair with 3 YOY	2/3 Yes
MP_9_AS_01 (a+b)	Bat boxes	Various bats including little brown bat and small-footed myotis	2012	No detection of bats yet	Unknown	Unknown

YOY = young of the year

5.3.4 Wildlife Friendly Fence Lines

All fence lines constructed under the MULTISAR project will be wildlife friendly and will include a smooth double stranded bottom wire at least 18 inches off the ground and the top wire height at a maximum of 40 inches. Where deemed required, vinyl markers were also installed to help avoid avian collisions. Refer to Section 5.3.4 of Downey *et al.* 2011 for objectives and desired measures of success for all of MULTISAR's wildlife friendly fencing projects. In 2012, one new MULTISAR cooperator received wildlife friendly fencing material to repair damage from a wildfire (9.6 km worth) and two other participants altered 11.2km of fence lines. Outside of the MULTISAR project, the Alberta Fish and Game Association (AFGA) and many volunteers have completed many kilometers of wildlife friendly fencing on MULTISAR cooperating landholders (Table 15). This work was considered in-kind and no monitoring will be completed for these areas as the landholders have agreed to have the fences built to wildlife friendly specification.

Table 15. Wildlife friendly fence line constructed by AFGA in 2012.

Enhancement Property	Target Species	Reflectors Installed	Km of fence
MP_1	Pronghorn	No	6
MP_7	Pronghorn and Greater Sage Grouse	No	7
MP_19	Pronghorn and Greater Sage Grouse	No	12
MP_4	Pronghorn and Greater Sage Grouse	No	5.5

5.3.5 Weed Control

Sites invaded by noxious and restricted weed species reduce health, as the invading species quickly replace the native vegetation, reducing diversity and productivity. Refer to Section 5.3.5 of Downey *et al.* 2011 for objectives, desired measures of success and monitoring time frames.

Two properties that implemented bio-control (insects) for leafy spurge and Dalmatian toadflax and three other properties were monitored for chemical control applications. Results of this monitoring are summarized in Table 16.

Table 16. Weed control monitoring.

Enhancement Project	Date Implemented	2012			
		Species of Weed	Control Method	If Bio-Control used, are larvae present?	Desired Effect/Trend Occurring
MP_8_WC_01	June 2011	Leafy Spurge (*Euphorbia esula*)	Bio-control/Spray	Larvae not found but control agents present	Yes die off of spurge evident
MP_10_WC_01	2010	Canada Thistle (*Cirsium arvense*), Hound's Tongue (*Cynoglossum officinale*), Spotted Knapweed (*Centaurea biebersteinii*), and Tall Buttercup (*Ranunculus acris*)	Restore herbicide	N/A	N/A Landholder has not started to use provided herbicide.
MP_11_WC_01	2010	Canada Thistle, Hound's Tongue, and Downy Brome (*Bromus tectorum*)	Restore herbicide	N/A	Yes Landholder has found particularly good control of Canada thistle

Enhancement Project	Date Implemented	2012			
		Species of Weed	Control Method	If Bio-Control used, are larvae present?	Desired Effect/Trend Occurring
MP_9_WC_01	June 2009	Dalmatian Toadflax (*Linaria dalmatica*)	Bio-control/Spray	Larvae not found, but control agents found	Yes Large dalmatian toadflax die off as well as all live plants investigated showed signs of stress
MP_7WC_01	2012	Canada Thistle	Herbicide	N/A	Too early to determine

5.3.6 Watering Systems

Water improvement monitoring will occur at two levels depending on the scale of impact.

A) Portable Watering Units

Portable Watering Units are usually purchased through MULTISAR to help reduce impacts to wetlands/riparian areas and to better distribute cattle throughout the pasture. Portable watering units can attract cattle away from wetlands/riparian areas thereby improving wildlife habitat by increasing emergent vegetation, reducing erosion of the slopes and shoreline by cattle, and increasing the longevity of wetlands/riparian areas. Portable watering units are used with several MULTISAR participants: MP_8, MP_5, MP_1, and MP_4. These units, since they were built to be portable, have been used at various locations on these properties. Upon investigating their last known locations, many of the dugout locations have seen increased bank vegetation, and improved bank stability with the increased presence of shrubs. Emergent vegetation observations, photos and wildlife observations were recorded at all portable watering units on all four MULTISAR participant properties.

B) Watering Sites (Uplands)

Upland watering sites are utilized to attract cattle into an area which is seldom used, in order to create heavier grazing pressure to benefit targeted species. Upland watering sites can also help decrease impacts on other wetlands and riparian areas in the same pasture.

Refer to Section 5.3.6 of Downey et al. 2011 for objectives, desired measures of success, and monitoring time frames for portable watering units and upland watering sites. In 2012, wildlife surveys were conducted at all upland watering sites used. The results for upland watering sites range health are summarized in Table 17.

Table 17. Upland watering site enhancement wildlife monitoring.

Enhancement Site	Target Species	Date Implemented	Latest Wildlife Survey	Point count wildlife species observed in 2012	Range health trend near the watering site(s)	Range health trend 200 m from the watering site(s)	Desired Effect/Trend Occurring
MP_5_UWS _01-03 Only could assess UWS_03 due to a grass fire affecting the other areas.	Burrowing Owl	2008	2012	Brewer's Blackbird Horned Lark Killdeer Richardson's Ground Squirrel Savannah Sparrow Vesper Sparrow Wilson's Phalarope Western Meadowlark	Upward	Upward	More information required as only one site could be evaluated due to fire.
MP_1_UWS_01	Burrowing Owl Prairie Rattlesnake Loggerhead Shrike	2010	2012	Brewer's blackbird Horned lark Pronghorn Richardson's ground squirrel Sprague's pipit Vesper Sparrow Western meadowlark	Stable	Upward	Yes Range health improves as you get further away from the water well
MP_8_UWS_01	Burrowing Owl Grassland Birds Northern Leopard Frog	2010	2012	Chestnut-Collared Longspur Clay-Colored Sparrow Cliff Swallow Gadwall McCown's Longspur Richardson's Ground Squirrel Savannah Sparrow	Upward	Slight Upward	Yes
MP_9_UWS_01-02	Ferruginous Hawk Grassland Birds (deferred grazing) Eastslope Sculpin (*Cottus sp.*)	2010	2012	Richardson's ground squirrel Savannah Sparrow	Stable	Stable-Upward	Yes

5.3.7 Tree and Shrub Protection

Trees and shrubs which have been or have the potential to be heavily impacted by cattle are generally recommended to have fence lines or corral panels placed around them to help prevent their gradual destruction and subsequent loss. Trees, especially lone cottonwood trees, in pastures that can be used as nesting sites by ferruginous hawks should also be protected. Sites in which the landholder implements the recommendations will be monitored every three years with photos taken to document the reduced impact of cattle on trees or shrubs. Raptors observed using the site will also be documented. Monitoring occurred at three locations in 2012, two sites on MP_4 and one on MP_7. No hawks were seen using the sites but were documented in the area at two of the locations.

5.4 Future Direction

In 2013-2014 MULTISAR will continue to monitor enhancement projects to determine if desired effects are occurring. Sixteen enhancement projects (sites) have been identified for monitoring (Table 18).

Table 18. Monitoring of enhancement projects in 2013.

Enhancement Type	Property	Monitoring Year/Comment
Restoration Project	MP_7_RP 01 +02 MP_18_RP_01	2013 Yearly monitoring for range and wildlife
Shelterbelt and Shrub planting	MP_7_SSP_01+ 02 MP_18_SSP_01	2013 Yearly monitoring
Artificial Structures	MP_8_AS_01-03 MP_9 AS_01 (a+b) MP_26_AS_01-02	2013 Yearly monitoring until used by target wildlife species
Wildlife Friendly Fencing	MP_5_WF_02 MP_8_WF_01 MP_6_WF_01	2013

In 2013-2014 MULTISAR will also revisit experimental design scenarios to systematically determine whether treatments (enhancement) are actually creating the observed effect on the landscape. Before-After-Control-Impact design (BACI) will be utilized to build habitat representations before and after treatments as well as look at control and reference sites. The BACI design is favored over before and after comparisons because the effect found may not be due to implemented enhancements but rather to some temporal change such as moisture levels (Schwarz 2010). As the MULTISAR enhancement and monitoring database grows, all information, results, etc. will be entered into an appropriate database for proper storage for future reference and other statistical analysis.

6.0 FUTURE DIRECTION: 2013-2014

In 2013-2014, MULTISAR will continue to work on achieving its goals and objectives under the 2009-2014 Business Plan in its three core programs areas:

1. Habitat Conservation Program:

    1.1. Seek interested landholders in priority species at risk areas and complete at least one new habitat conservation strategy (~8,000 acres) with their cooperation and with Alberta Environment and Sustainable Resource Development, the Alberta Conservation Association and Prairie Conservation Forum. This includes detailed vegetation and wildlife inventories, as well as range and riparian health assessments to identify habitats, priority species and the ecological condition of the rangeland and riparian areas.

    1.2. For those species at risk detected during inventories, use MULTISAR as the tool to implement recovery actions identified in provincial and national recovery plans.

    1.3. Secure habitat for species at risk through signed stewardship commitment agreements.

    1.4. Assist 4-5 landholders, based on priority, that have had a Habitat Conservation Strategy completed, in implementing habitat enhancement recommendations outlined in their HCS.

    1.5. Complete 10-20 new Species at Risk Conservation Plans or Beneficial Management Plans including seeking interested landholders, conducting pre-assessment interviews and research, carrying out rapid assessments and delivery of final report to landholders.

2. Education, Outreach and Awareness Program:

    2.1. When opportunities with watershed and other conservation groups present themselves, promote the MULTISAR message and distribute relevant information to its target audiences.

    2.2. Deliver 3-5 formal presentations at conferences, workshops, or similar events.

    2.3. Give 5-10 presentations at landholder orientated events to promote the MULTISAR message, as well as the Habitat Conservation Program.

    2.4. Assemble information and images, write and distribute 2 issues of the Grassland Gazette; MULTISAR's newsletter.

    2.5. Update and reprint MULTISAR brochures or fact sheets on species at risk and beneficial management practices, as needed.

    2.6. Regularly update MULTISAR's website, Facebook and Twitter accounts and ensure relevancy and accuracy of posted information.

3. Research, Monitoring and Data Management Program:

3.1. Participate in the annual monitoring of ferruginous hawks throughout their range in collaboration with ESRD.

3.2. Assist ESRD in conducting greater sage-grouse and sharp-tailed grouse monitoring on leks in southeastern Alberta.

3.3. Monitor loggerhead shrikes on 3-4 routes in southern Alberta.

3.4. Monitor amphibians on up to 10 road transects (RANA Routes), if temperatures and precipitation allow for the great plains toad and the plains spadefoot to emerge and reproduce.

3.5. Work with academic institutions on two projects, including the establishment of a native grassland demonstration site.

3.6. Evaluate three properties (~50,000 acres) originally assessed in 2007-2008, to measure how effective the HCS plan was at influencing habitat management, habitat value for species at risk and landholders' perceptions of species at risk.

3.7. Monitor habitat enhancement projects from up to 26 habitat conservation strategies (16+ enhancement sites) developed in the Milk River, St. Mary River and Pakowki Lake basins since 2005.

3.8. Use updated habitat suitability models based on the new Grassland Vegetation Inventory (GVI) biophysical database to re-prioritize the Grassland Natural Region for species at risk conservation.

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APPENDIX A .Summary of the answers to key questions on the SARC Plan questionnaire from 2012-2013 participants

Landholder Knowledge and Attitudes Towards Wildlife and Species At Risk

Percent of Landholders* (%)	Response to MULTISAR SARC Plan Questionnaire
40	Wildlife beneficial to operation:
100	Their land is important for SAR/wildlife habitat
80	SAR should be protected by law
100	Aware of SAR legislation
80	Currently make adjustments for SAR/wildlife.
100	Willing to make changes in management if doesn't affect their bottom line; 14% said maybe.

*Questionnaire Results based on 5 questionnaires.

Beneficial Management Practices Currently Used by Landowners Prior to the Completion of a SARC Plan

Percent of Landholders (%)	Beneficial Management Practice
100	Maintaining native prairie
100	Rotational grazing if appropriate
100	Resting pastures after use to restore forage
40	Delaying field work with machinery until after wildlife have nested
0	Using flushing bars
0	Seeding fall seeded crops
20	Using zero or minimal tillage
100	Maintaining shelterbelts and natural trees
100	Limiting chemical use around water bodies or leaving buffer zones
20	Leaving veg. buffer around wetlands when haying/cultivating
100	Not draining wetlands
60	Limiting grazing around wetlands
100	Removing invasive alien weeds
80	Limiting environmental disturbance from industry

APPENDIX B. List of Acronyms

AC	Acre
ACA	Alberta Conservation Association
AFGA	Alberta Fish and Game Association
ESRD	Alberta Environment and Sustainable Resource Development
ATPR	Alberta Tourism, Parks and Recreation
AU	Animal Unit
AUM	Animal Unit Month
BACI	Before After Control Impact
BMP	Beneficial Management Practice
ESSR	Ecologically Sustainable Stocking Rate
FWMIS	Fish and Wildlife Management Information System
GIS	Geographic Information System
GNR	Grassland Natural Region
GPS	Global Positioning System
GVI	Grassland Vegetation Inventory
HCS	Habitat Conservation Strategy
MAC	Management Advisory Committee
MCV	Multi-Species Conservation Value
MLA	Member of the Legislative Assembly
MULTISAR	Multiple Species At Risk
OGC	Operation Grassland Community
PCF	Prairie Conservation Forum
RANA	Researching Amphibian Numbers in Alberta
RH	Range Health
SARC	Species at Risk Conservation
SARC Plan	Species at Risk Conservation Plan

For a list of additional reports in the Alberta Fish and Wildlife Division-Species at Risk Report Series please go to our website.

http://www.srd.alberta.ca/FishWildlife/SpeciesAtRisk/ProgramReports.aspx